

## Two new species of *Hibbertia* section *Candollea* (Dilleniaceae) from the south-west of Western Australia

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### Abstract

Wheeler, J.R. Two new species of *Hibbertia* section *Candollea* (Dilleniaceae) from the south-west of Western Australia. *Nuytsia* 14(3): 419–426 (2002). Descriptions and illustrations of the new species *Hibbertia notibractea* J.R. Wheeler and *H. trichocalyx* J.R. Wheeler, are presented. Both species are closely related to *Hibbertia ferruginea* J.R. Wheeler, and a key to these three species is given. They belong to *Hibbertia* sect. *Candollea* Gilg.

### Introduction

During the preparation of a treatment of the family Dilleniaceae for the “Flora of the Perth Region” (Wheeler 1987), studies commenced on a species aggregate belonging to *Hibbertia* section *Candollea* Gilg. A new species, *Hibbertia ferruginea* J.R. Wheeler was described (Wheeler 1984), and its relationship to closely related taxa, as it was then understood, was detailed. Further studies, during the preparation of the “Flora of the South West (Bunbury–Augusta–Denmark)” (Wheeler *et al.* in press), have enabled the discrimination of further taxa in this group. Two new species, which extend from Margaret River to Two Peoples Bay just east of Albany, are described and illustrated here.

### Taxonomy

#### Key to species of the *Hibbertia ferruginea* complex

- 1. Carpels 5. Stamens 15. Sepals with dense brownish appressed hairs. Leaves bluntly mucronate, margins revolute ..... **H. ferruginea**
- 1. Carpels 3. Stamens 11. Sepals glabrous or with occasional white or brown hairs. Leaves obtuse, flat or margins slightly to prominently recurved.
  - 2. Outer sepals (5)6–8 mm long, glabrous or almost so apart from the ciliolate margin. Bracts usually glabrous or almost so ..... **H. notibractea**
  - 2. Outer sepals (3)4.5–6(6.5) mm long, white-hairy. Bracts hairy in their upper half ..... **H. trichocalyx**

**Hibbertia notibractea** J.R. Wheeler, *sp. nov.*

Species insignis bracteis conspicuis fere glabris, cremeis vel pallido bruneis; differt a *Hibbertiae ferruginea* et *H. trichocalyx* sepalis fere glabris.

*Typus*: Blackwood River, Fisher Road near Molloy Caravan Park, Western Australia, 5 September 1983, J.R. Wheeler 2122 B (*holo*: PERTH 03076466; *iso*: AD, CANB, K).

*Shrub* to 0.6 m high, multistemmed, erect, sprawling or prostrate; branchlets with sparse appressed hairs, glabrescent. *Leaves* alternate or in alternate clusters, sessile, spreading and occasionally recurved towards their tip, linear to very narrowly oblong-obovate, 6–25(40) mm long, 0.8–3 mm wide, glabrous, glabrescent or sparsely hairy with long pilose hairs, upper surface smooth or somewhat tuberculate, entire, flat or margins slightly to prominently recurved, apex obtuse. *Flowers* axillary or terminating axillary shoots, solitary, sessile, 10–15 mm diam. *Bracts* 3–6, conspicuous, cream to pale brown, broadly elliptic and somewhat concavo-convex, varying in size with the largest 4–7.5 mm long, 3–4 mm wide, usually fairly rigid in the centre but becoming thinner towards the margin, glabrous apart from occasional woolly apical hairs and a ciliolate to ciliate margin (cilia white or red-brown), apex obtuse but frequently abruptly acuminate or with the midrib continued as a soft and often curved awn: outermost bracts shortest, often with a darker midrib and sometimes with a minute leaf-like tip. *Sepals* 5, basally connate, narrowly ovate, glabrous or sometimes with occasional red-brown or white appressed apical hairs and a ciliolate margin; outer sepals (5) 6–8 mm long, 1.5–2.5 mm wide, long-acute; inner sepals slightly shorter and broader, (4.5) 5.5–7 mm long, 2.5–3.5 mm wide, obtusely acuminate and sometimes softly awned. *Petals* 5, yellow, obovate, (5) 7–8 mm long, emarginate. *Stamens* 11 all around the carpels, 9 of them with their filaments fused into 3 fascicles each of 3 stamens, the remaining 2 stamens free; filament 1–1.5 mm long; anther elliptic, 1–1.8 mm long. *Carpels* 3, glabrous; style 1.5–3 mm long; ovule 1 per carpel. *Fruitlets* obovoid, 1.5–2.5 mm long; seed light brown, ellipsoid, *c.* 1.3 mm long, *c.* 1 mm wide, with a waxy basal aril. (Figure 1)

*Selected specimens examined* (all PERTH). WESTERN AUSTRALIA: Meelup Springs Reserve, Cape Naturaliste Rd, Eagle Bay, 29 Sep. 1999, D. Carter 148; Boat Harbour Road, 2.9 km by road SW of South Coast Highway junction, 25 Nov. 1990, N. Gibson & M. Lyons 884; Denmark Shire, Denbarker State Forest, track S from Blue Lake Road to Possum Trapper's Cave, 21 Oct. 1993, B.G. Hammersley 987; Denmark Shire, Old Railway Reserve *c.* 1 km W from Happy Valley Rd, 13 Oct. 1999, B.G. Hammersley 2274; *c.* 5 miles [8 km] E of Alexandra Bridge along Brockman Highway, 18 Oct. 1971, R.D. Hoogland 12152 (duplicates CANB, B, G, K, L, UC, US all *n.v.*); Rainbow Caves Rd, 0.9–1.2 km W of junction with Caves Rd, Shire of Augusta–Margaret River, 6 Oct. 1999, J.W. Horn 2765 (duplicate DUKE *n.v.*); Scott River National Park, 26 Sep. 1990, C.J. Robinson 189; Calgardup, track along N boundary of Leeuwin–Naturaliste National Park, 500 m W of Caves Rd, 27 Oct. 1999, J. Scott 132; Peaceful Bay, *c.* 4.5 km W along Ficifolia Rd, 26 Sep. 1986, J.R. Wheeler 2467 (duplicate CANB); Walpole–Normalup National Park, junction of Nut and Ficifolia Rds on Nut Rd, 21 Sep. 1992, J.R. Wheeler 3220.

*Distribution*. Western Australia, South West Botanical Province, IBRA regions (Thackway & Cresswell, 1995) of Warren and Jarrah Forest. Recorded from Leeuwin National Park to near Denmark. (Figure 2A)

*Habitat*. Recorded on sandy soils from slight rises around swamps or seasonally inundated areas, occasionally from sand in sheoak woodland, *Corymbia ficifolia* woodland or banksia woodland, less often from Jarrah forest.

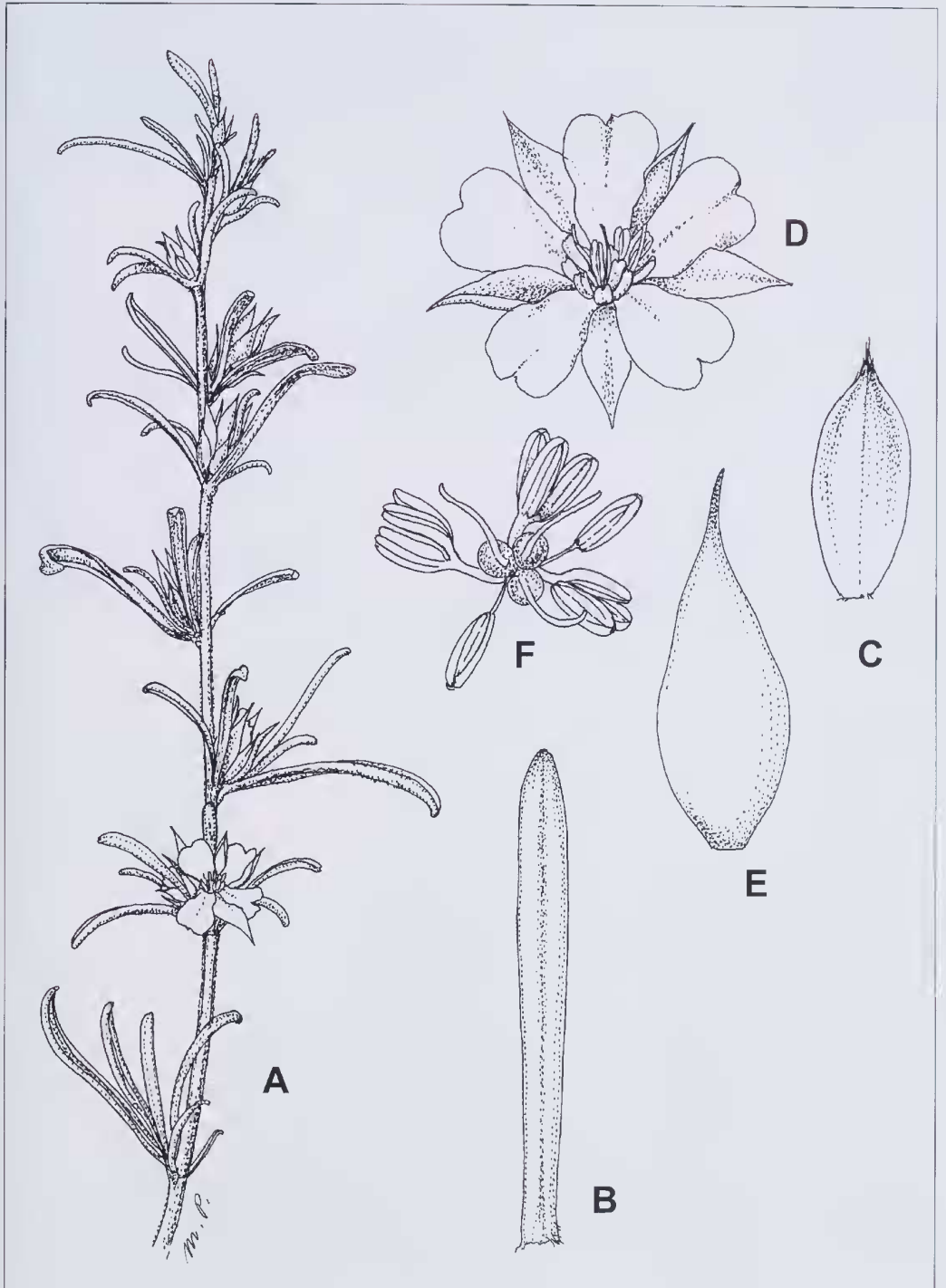


Figure 1. *Hibbertia notibractea*. A – flowering branch (x2), B – leaf (x4), C – bract (x8), D – flower (x4), E – outer sepal (x8), F – stamens and carpels (x8). Drawn from *N. Gibson & M. Lyons 884*.

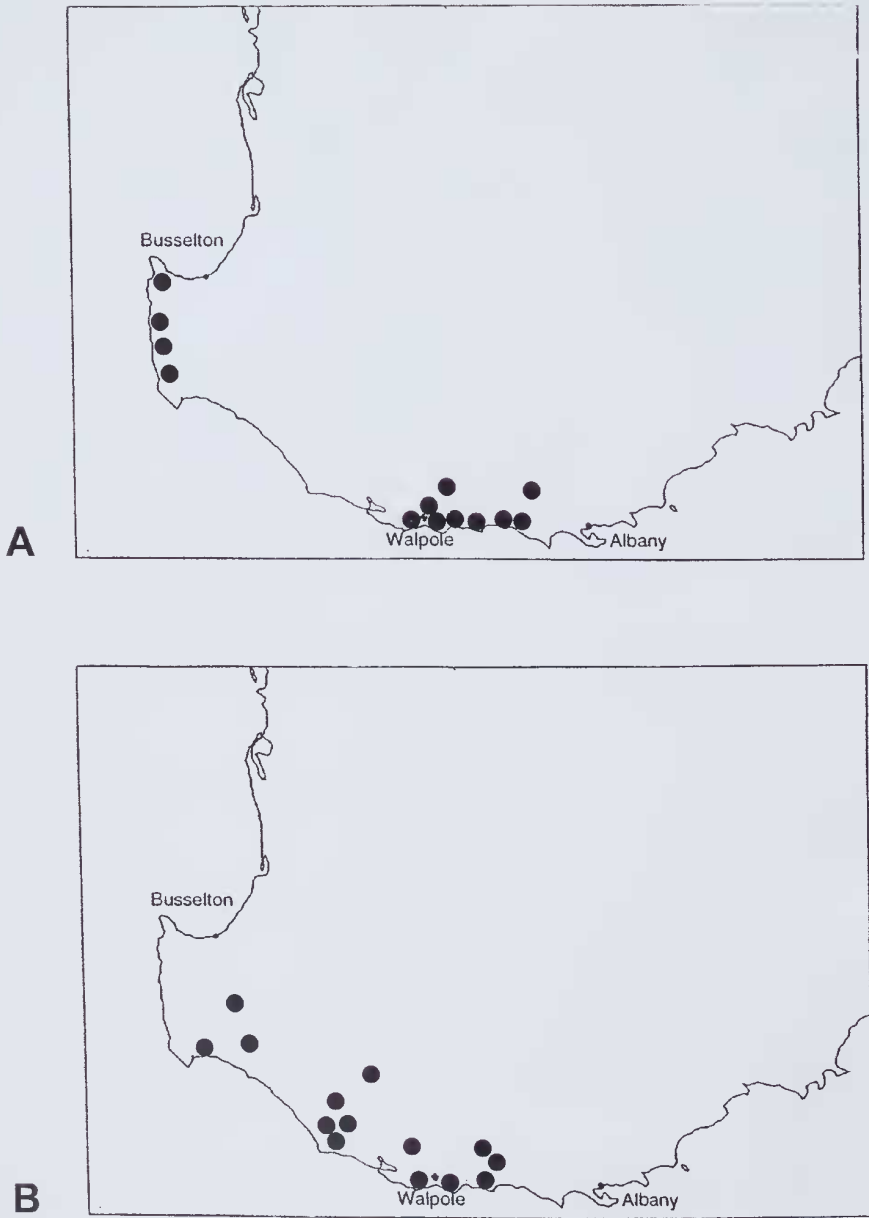


Figure 2. Distribution maps. A – *Hibbertia notibractea*; B – *Hibbertia trichocalyx*.

*Phenology.* Flowers recorded August to December; fruits recorded September to December.

*Conservation status.* Widespread along the south coast and apparently not endangered, being recorded from three national parks, although its response to attack by *Phytophthora* has not been documented.

*Etymology.* The name from the Latin, *nota* – distinguishing mark or feature and *bractea* – bract, referring to the large conspicuous bracts surrounding the flowers.

*Affinities.* Closely related to both *Hibbertia ferruginea* and *H. trichocalyx*. *Hibbertia ferruginea* differs in having somewhat longer and narrower leaves which are more tightly recurved to the midrib and which have a distinct but blunt apical point, its bracts are similar in shape but more hairy, its sepals are acute with appressed brown hairs and it has 15 stamens in 5 fascicles each with 3 anthers arranged around 5 glabrous carpels. *Hibbertia notibractea* differs from *H. trichocalyx* in leaf, bract and sepal characteristics (see affinities section under that species).

*Notes.* Collections from the Peaceful Bay area often have leaves which are somewhat tuberculate and with prominently recurved margins. A collection (*R.D. Hoogland* 12139) from west of Forest Grove has short flat leaves 6–10 mm long and unusually small flowers, its sepals only 4.5–6 mm long. This collection resembles *H. trichocalyx* but with glabrous sepals and almost glabrous bracts; it appears to be an intermediate. Another apparent intermediate specimen collected from Yelverton (*G.J. Keighery* 10849) resembles *H. notibractea* but approaches *H. trichocalyx* in its distinctly hairy sepals. Some of the hairs of the calyx of this specimen are quite rusty brown in colour and are reminiscent of *H. ferruginea*.

***Hibbertia trichocalyx*** J.R. Wheeler, *sp. nov.*

*Hibbertiae notibractea* similis sed sepalis brevioribus pilosis et bracteis leviter pilosis.

*Typus:* Northcliffe–Windy Harbour, 5 km north of Windy Harbour, Western Australia, 27 September 1986, *J.R. Wheeler* 2472 (*holo:* PERTH 03076741; *iso:* AD, CANB, K).

*Shrub* to 0.6 m high, prostrate or sprawling, usually multistemmed, the young shoots often softly and densely hairy; branchlets hairy with somewhat curled hairs. *Leaves* alternate or in alternate clusters, sessile, somewhat spreading, oblong, elliptic or obovate, (3.5)5–12(20) mm long, 1.5–4.5(6) mm wide, moderately to densely softly hairy with long, fine and somewhat curled or tangled hairs, entire, flat or with very slightly recurved margins, apex obtuse. *Flowers* axillary or terminating short axillary shoots, solitary, sessile, 8–12(15) mm diam. *Bracts* 2 or 3, usually quite conspicuous, cream to pale brown, elliptic to broadly elliptic, flat to concavo-convex, 2.5–5 mm long, 1.5–3.5(4) mm wide, with white hairs towards the apex, margin usually ciliolate to ciliate (cilia white to red-brown), apex obtuse, abruptly acute or acuminate, rarely the outermost with a leaf-like tip. *Sepals* 5, basally connate, ovate-elliptic, with long tangled hairs at least in the upper half, hairs mostly white but occasionally with a few red-brown hairs towards the apex and margins; outer sepals (3)4.5–6(6.5) mm long, 1.5–2 mm wide, acute to long-acute or the midrib extended as a soft awn; inner sepals slightly shorter and broader, (3)4–5.5 mm long, c. 2.5 mm wide including a thin glabrous margin, subacute to obtusely acuminate with the midrib extended as a soft awn. *Petals* 5, yellow, obovate, 4–7 mm long, emarginate. *Stamens* 11 all around the carpels, 9 of them with their filaments fused into 3 fascicles each of 3 stamens, the remaining 2 stamens free; filament c. 1 mm long; anther oblong-elliptic, 1–1.5 mm long. *Carpels* 3, glabrous; style c. 1.5 mm long; ovule 1 per carpel. *Fruitlets* obovoid, 2–2.5 mm long; seed light brown, ellipsoid, 1.5–2 mm long, c. 1 mm wide, with a waxy basal aril. (Figure 3)

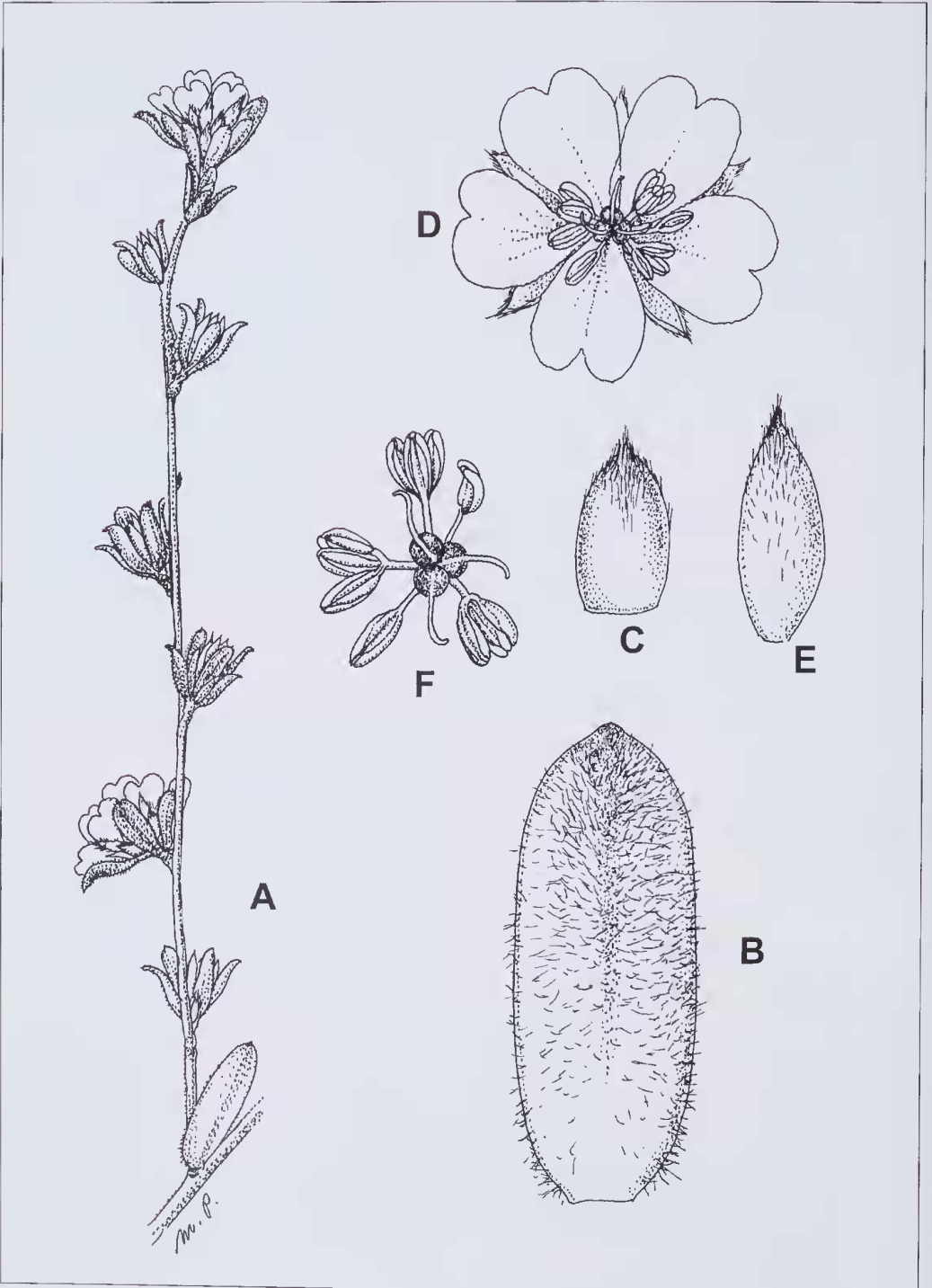


Figure 3. *Hibbertia trichocalyx*. A – flowering branch (x2), B – leaf (x8), C – bract (x8), D – flower (x4), E – outer sepal (x8), F – stamens and carpels (x8). Drawn from *J.R. Wheeler* 2472.

*Selected specimens examined* (all PERTH). WESTERNAUSTRALIA: Boggy Lake, Walpole, Nov. 1958, *D. Churchill s.n.*; Quinninup tip, 2 Nov. 1997, *R.J. Cranfield* 11609; Cell 5, Site 165, Four Acres Rd, 2.4 km W of Tom Brittan Road bearing W, 20 Oct. 1998, *R. Davis* 7477; Peaceful Bay, 1.3 km W along Ficifolia Rd from Peaceful Bay, S side, 2 Oct. 1995, *B.G. Hammersley* 1463; along Wheatley Coast Rd, c. 2 miles [3 km] N of Windy Harbour, 25 Oct. 1971, *R.D. Hoogland* 12194 (duplicates CANB, HBG, K, L, NSW, TNS, US all *n.v.*); Site 130, S of Beardmore Rd, E of South Western Highway, 25 Aug. 1997, *K.A. Redwood* 443; Rosa Brook, Margaret River District, 15 Oct. 1954, *R.D. Royce* 4898; Stewart Rd, 13.1 km from Vasse Highway (c. 35 km SSW of Nannup), 4 Sep. 1983, *J.R. Wheeler* 2110 (duplicates CANB, K); 1.1 km W along Ficifolia Rd, Peaceful Bay, 26 Sep. 1986, *J.R. Wheeler* 2464; Northcliffe–Windy Harbour, 5 km N of Windy Harbour, 27 Sep. 1986, *J.R. Wheeler* 2474 (duplicates AD, DUKE).

*Distribution.* Western Australia, South West Botanical Province, IBRA regions (Thackway & Cresswell, 1995) of Warren and Jarrah Forest. Recorded from Margaret River to Peaceful Bay. (Figure 2B)

*Habitat.* Sandy soil, often on well-drained rises, in heath, mallee-heath, eucalypt and banksia woodland. Occasionally recorded from swampy sites.

*Phenology.* Flowers September to November; fruits recorded for November.

*Conservation status.* Widespread along the south coast and not believed to be under threat, although its response to attack by *Phytophthora* has not been documented.

*Etymology.* From the Greek *trich* – hair, *calyx* – covering of a flower or fruit, the name referring to the hairy nature of the calyx.

*Affinities.* Closely related to *Hibbertia notibractea* and with a similar distribution pattern but apparently occupying slightly drier sites. The leaves of *Hibbertia trichocalyx* are flat and more densely hairy than those of *H. notibractea*; its bracts are not usually as conspicuous nor as large, are somewhat hairy and sometimes fewer in number. The sepals of *Hibbertia trichocalyx* are usually smaller than those of *H. notibractea* and distinctly hairy. *Hibbertia trichocalyx* differs from its other close relative, *H. ferruginea*, in its broader and shorter flat leaves, fewer and less conspicuous smaller bracts, smaller sepals and a reduced stamen and carpel number. The sepal indumentum of *Hibbertia ferruginea* is also denser and distinctly brownish in colour.

## Discussion

Both the new species are closely related to *Hibbertia ferruginea* and together form a distinct subgroup within section *Candollea*. The differences between the three of them are detailed under each of the two new species. It is interesting that the Yelverton and Forest Grove collections seem to indicate a small degree of overlap in the Margaret River area where all three species occur. *Hibbertia ferruginea* occurs from Busselton and Collie south to the Scott River National Park, with an outlying record from 18 km south-south-west of Rocky Gully.

The three species are also relatively closely related to the *Hibbertia depressa* complex. They differ from *H. depressa* Steud. and *H. helianthemooides* (Turcz.) F. Muell. in their broad prominent bracts and in their more narrowly acute sepals, with the outer sepals slightly longer than the innermost. *Hibbertia*

*depressa* and *H. helianthemoides* have leaves that are narrow and more densely clustered, the clusters separated by longer internodes, a different indumentum in which the hairs of the lower leaf surface often form an apical tuft. They also have bracts which are less prominent and sepals which are more obtuse, subequal or the outer sepals slightly shorter than the innermost. The *Hibbertia depressa* complex will be the subject of a separate paper.

Sometimes *Hibbertia pulchra* Ostenf. may be superficially similar to *H. notibractea*, but what appear to be large bracts in the buds of *H. pulchra* are actually the broad outer sepals which are slightly shorter than the inner sepals. *Hibbertia pulchra* has bracts which are shorter, circular to broadly elliptic with a distinctly ciliolate margin, glabrous sepals which are obtuse to obtusely apiculate and thick but flat leaves. *Hibbertia pulchra* occurs in the Manjimup area extending east towards Mount Barker and possibly further east.

### Acknowledgements

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### References

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